

PATENT

Attorney Docket No. SIC-04-006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:

MASAHIKO FUKUDA

Application No.: 10/708,325

Filed: February 24, 2004

For: GEAR REDUCTION APPARATUS  
FOR A BICYCLE COMPONENT

Examiner: David Morgan Fenstermacher

Art Unit: 3682

APPEAL BRIEF

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Commissioner:

This is an appeal brief for the above-captioned matter.

**I. Real Party In Interest**

The assignee and real party in interest is Shimano, Inc., a Japanese corporation having a principal place of business in Osaka, Japan.

**II. Related Appeals And Interferences**

There are no prior or pending appeals, interferences or judicial proceedings known to the appellant, to appellant's legal representative, or to the assignee which may be related to, directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

**III. Status Of Claims**

Claims 1-21 are pending under final rejection and are under appeal.

**IV. Status Of Amendments**

No amendment was filed subsequent to final rejection.

**V. Summary Of Claimed Subject Matter**

The application discloses a gear reduction apparatus for a bicycle component. Cited reference numbers and text are examples only and are not intended to be limiting. Line numbers refer to the line numbers within each individually cited paragraph.

As applied to independent claim 1, a gear reduction apparatus ((210), Figs. 13-14, Page 7, paragraph [0029], lines 1-2) for a bicycle component (e.g., derailleur (52), Fig. 2) comprises:

a gear support ((300), Figs. 13-14, page 7, paragraph [0029], lines 5-7);

a first gear ((304), Figs. 13-14, page 7, paragraph [0029], lines 7-10) coupled to the gear support (300) for receiving rotational drive force from a drive component ((206), Fig. 10);

a second gear ((310), Figs. 13-14, pages 7-8, paragraph [0029], lines 10-13) coupled to the gear support (300) for communicating rotational drive force to a driven portion ((314), Fig. 9) of the bicycle component (52);

wherein the first gear (304) is operatively coupled to the second gear (310) (e.g., through intermediate gears ((316, 318, 320, 322), Figs. 13-14) as described at pages 7-8, paragraph [0029], lines 13-15) to communicate rotational drive force from the drive component (206) to the driven portion (314) of the bicycle component (52); and

wherein the first gear (304), the second gear (310) and the gear support (300) are coupled together so that the first gear (304), the second gear (310) and the gear support (300) so coupled together are structured to be coupled to and removed from the drive component (206) and the driven portion (314) of the bicycle component as a self-contained unit (Page 7, paragraph [0029], lines 2-5).

As applied to independent claim 21, a gear reduction apparatus ((210), Figs. 13-14, Page 7, paragraph [0029], lines 1-2) for a bicycle component (e.g., derailleur (52), Fig. 2) comprises:

a gear support ((300), Figs. 13-14, page 7, paragraph [0029], lines 5-7);

a first gear ((304), Figs. 13-14, page 7, paragraph [0029], lines 7-10) coupled to the gear support (300) for receiving rotational drive force from a drive component ((206), Fig. 10);

a second gear ((310), Figs. 13-14, pages 7-8, paragraph [0029], lines 10-13) coupled to the gear support (300) for engaging a driven portion ((314), Fig. 9) of the bicycle component (52);

wherein the first gear (304) is operatively coupled to the second gear (310) (e.g., through intermediate gears ((316, 318, 320, 322), Figs. 13-14) as described at pages 7-8, paragraph [0029], lines 13-15) to communicate rotational drive force from the drive component (206) to the driven portion (314) of the bicycle component (52); and

wherein the first gear (304) and the second gear (310) are supported in the gear support (300) by plastic gear support parts ((302, 303), Figs. 13-14, page 7, paragraph [0029], lines 7-8).

## **VI. Grounds of Rejection to be Reviewed on Appeal**

Claims 1-21 stand rejected under 35 U.S.C. §102(b) as being anticipated by Campagnolo (US 6,623,389).

## **VII. Argument**

### **Rejection under 35 U.S.C. §102(b) over Campagnolo (US 6,623,389)**

#### **Claims 1-20**

Campagnolo discloses a motor and reduction gear assembly (27) comprising a motor (35), a reduction gear assembly (29), and an optical encoder assembly (32) all housed within a common casing or body (28). The office action simply refers to optical encoder assembly (32) as a gear assembly. A gear assembly is not recited in claim 1, and the office action does not otherwise apply the language of claim 1 to Campagnolo. It is unknown what is the first gear, the second gear, or the gear support. It is assumed that possibly motor (35) is the drive component, but the office action does not address the claimed driven component. Even if optical encoder assembly (32) were somehow interpreted to have a gear support, a first gear, and a second gear (which does not appear to be the case), then there is no basis to conclude that optical encoder assembly (32) is structured to be removed as a unit from the drive component (motor (35)), especially since both components are contained within the common sealed body (28). The components are not connected together in any way that allows multiple components to be removed together as a self-contained unit. The same is

true if reduction gear assembly (29) is interpreted to correspond to the claimed first and second gears.

Since the Examiner did not apply any of the elements of claim 1 (other than the drive component) to Campagnolo, the Appellant is unable to determine any relevance of Campagnolo to dependent claims 2-20.

**Claim 21**

Claim 21 recites a gear support, a first gear, and a second gear, wherein the first gear and the second gear are supported in the gear support by plastic gear support parts. As stated in Appellant's specification at page 9, paragraph [0032], lines 8-11, forming gear support parts such as main support (302), main support cover (303) and position sensing unit support (374) from a plastic material reduces manufacturing costs and also reduces the noise from the operation of the gears.

Campagnolo does not specify the materials used to construct his components, and the office action does not discuss claim 21, so it cannot be said that Campagnolo anticipates claim 21.

Respectfully submitted,



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**VIII. CLAIMS APPENDIX**

CLAIM 1. A gear reduction apparatus for a bicycle component, wherein the apparatus comprises:

a gear support;

a first gear coupled to the gear support for receiving rotational drive force from a drive component;

a second gear coupled to the gear support for communicating rotational drive force to a driven portion of the bicycle component;

wherein the first gear is operatively coupled to the second gear to communicate rotational drive force from the drive component to the driven portion of the bicycle component; and

wherein the first gear, the second gear and the gear support are coupled together so that the first gear, the second gear and the gear support so coupled together are structured to be coupled to and removed from the drive component and the driven portion of the bicycle component as a self-contained unit.

CLAIM 2. The apparatus according to claim 1 further comprising a position sensing member operatively coupled to the gear support so as to receive rotational drive force from the drive component.

CLAIM 3. The apparatus according to claim 2 wherein the first gear, the second gear, the position sensing member and the gear support are coupled together so that the first gear, the second gear, the position sensing member and the gear support may be coupled to and removed from the drive component and the driven portion of the bicycle component as a self-contained unit.

CLAIM 4. The apparatus according to claim 3 wherein the position sensing member comprises an optical position sensing member.

CLAIM 5. The apparatus according to claim 3 wherein the position sensing member rotates integrally with the first gear.

CLAIM 6. The apparatus according to claim 5 further comprising a position sensing reduction gear operatively coupled between the first gear and the position sensing member to change a rotation rate between the first gear and the position sensing member.

CLAIM 7. The apparatus according to claim 6 wherein the gear support comprises:  
a main support that supports at least one of the first gear and the second gear; and  
a position sensing support that is detachably mounted to the main support, wherein the position sensing support supports the position sensing reduction gear so that the position sensing support and the position sensing reduction gear may be removed from the main support as a self-contained unit.

CLAIM 8. The apparatus according to claim 7 wherein the position sensing support supports the position sensing reduction gear and the position sensing member so that the position sensing support, the position sensing reduction gear and the position sensing member may be removed from the main support as a self-contained unit.

CLAIM 9. The apparatus according to claim 8 wherein the main support supports the first gear and the second gear.

CLAIM 10. The apparatus according to claim 1 wherein the drive component comprises an electric motor with a drive shaft for communicating rotational power to the first gear.

CLAIM 11. The apparatus according to claim 10 wherein the gear support includes a drive shaft receiving member for receiving the drive shaft.

CLAIM 12. The apparatus according to claim 11 wherein the drive shaft receiving member includes a drive shaft receiving opening for receiving the drive shaft therethrough.

CLAIM 13. The apparatus according to claim 1 wherein the bicycle electrical component comprises an electrical derailleur.

CLAIM 14. The apparatus according to claim 13 wherein the gear support is structured to mount to a base member of the derailleur.

CLAIM 15. The apparatus according to claim 14 wherein the driven portion comprises a link driving member that drives a link that couples the base member to a movable member supporting a chain guide.

CLAIM 16. The apparatus according to claim 15 wherein the link driving member comprises a link driving gear that engages the second gear.

CLAIM 17. The apparatus according to claim 16 wherein the gear support is structured to be mounted within the base member.

CLAIM 18. The apparatus according to claim 1 wherein the gear support is made of a plastic material.

CLAIM 19. The apparatus according to claim 1 wherein the gear support comprises a plurality of gear support parts.

CLAIM 20. The apparatus according to claim 19 wherein the plurality of gear support parts are made of a plastic material.

CLAIM 21. A gear reduction apparatus for a bicycle electrical component, wherein the apparatus comprises:

a gear support;

a first gear coupled to the gear support for receiving rotational drive force from a drive component;

a second gear coupled to the gear support for engaging a driven portion of the bicycle component;

wherein the first gear is operatively coupled to the second gear to communicate rotational drive force from the drive component to the driven portion of the bicycle component; and

wherein the first gear and the second gear are supported in the gear support by plastic gear support parts.

**IX. EVIDENCE APPENDIX**

**None**

**X. RELATED PROCEEDINGS APPENDIX**

**None**